

NOTES ON ARADIDAE FROM THE EASTERN HEMISPHERE XV (HEMIPTERA)*

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Studying further material of Aradidae from the collections of the Hungarian National Museum in Budapest, and the Drake collection, now incorporated into the collections of the U. S. National Museum in Washington, D. C., I found one new genus and a few new species belonging to the subfamily Mezirinae Oshanin.

I express my sincere gratitude to Dr. Eva Halaszfy, curator of the Department of Zoology, Hungarian National Museum, Budapest, and Dr. Carl J. Drake of the U. S. National Museum for the privilege to study their Aradidae.

Subfam. MEZIRINAE Oshanin, 1908.

Tribe Carventini Usinger, 1951.

I. *CARVENTUS* Stal, 1865.

Carventus australis new species

FEMALE. HEAD. Slightly shorter than wide through the eyes (22:25); anterior process robust, anteriorly slightly dilated and bifid, reaches to $\frac{3}{4}$ of the first antennal segment; antenniferous tubercles dentiform, slightly divergent, reach to $\frac{2}{5}$ of the first antennal segment. Antennae one and a half time longer than the head (34:22), finely granulated; the proportions of the antennal segments (1-4) are: 9:6:10:9. Eyes exerted. Vertex with a finely granulated, longitudinal ridge, and laterally of it, on each side, with a very fine, parallel, longitudinal carina. Postero-lateral borders, behind the postocular tubercles, straight and slightly oblique; along them runs from one eye to another a fine, arcuate sulcus. Rostrum does not reach the hind border of the head; rostral groove shallow, posteriorly closed.

PRONOTUM. Shorter than wide across the humeri (29:52), divided into two lobes by a deep, transverse furrow; fore lobe narrower than the hind lobe (42:52); collar neatly separated from the disc; the fore border of the fore lobe deeply emarginate laterally of the collar, there provided with a small tubercle, and on the outer side form two (1+1) small, rounded lobes, directed sideways; the lateral borders deeply and roundly emarginate, terminating with a small tooth just before the interlobal sulcus. Fore disc with a small elevated triangle behind the collar, and with an X-shaped median furrow near the hind border; laterally of it with two (1+1)

* Aradidae from the Oriental and Australian Regions 10.

crescent-shaped ridges. Hind lobe inflated, behind the humeri slightly emarginate; hind border straight before the scutellum, angularly projects backward laterally of it. Hind disc with a small tubercle on the median line, and with a fine transverse furrow along the hind border. (Fig. 1).

SCUTELLUM. Short (14:30); lateral borders convex, tip rounded; disc slightly inflated and coarsely punctured; median carina fine, granulated. Along basal border runs a fine, arcuate sulcus.

HEMELYTRAE. Reach to the middle of tergum VII; corium reaches to the middle of the scutellum; its outer border carinate; membrane large, with obsolete veins.

ABDOMEN. Ovate, longer than wide (72:70), (in this, and all following species, the length of the abdomen was taken on the upper side from the tip of the scutellum to the tip of segment IX). The outer borders of the connexiva II to V scarcely convex; those of VI less, and of VII more convex; postero-exterior angles (PE-angles) of the connexiva II to V slightly protruding, those of VI, and particularly of VII, angularly protruding. Dises of the connexiva scabrous, finely granulated, and with bigger and smaller rounded, callous spots. Venter finely granulated; sterna with inflated posterior borders, and a few rounded callous spots on the dises. Spiracles of segment II ventral, those of III to VII lateral and visible from above, those of the lobes (VIII) terminal (Fig. 2).

LEGS. Inermis.

COLOR. Yellow-brown, mostly covered with whitish incrustation. Two (1+1) callous spots on the fore border of the hind lobe of the pronotum. The median carina of the scutellum, an irregular spot near the middle of the outer border of the hemelytrae, middle and hind acetabula, are piceous. Rostrum and tarsi pale yellow-brown. Membrane yellowish.

FEMALE. Total length 4.7 mm.; width of the pronotum 2.3 mm.; width of the abdomen 2.3 mm. Paratype is smaller: 4.2, 1.5 and 2.0 mm. respectively.

Holotype, Female. Nanango District, Queensland, Australia—H. Hacker collector, Nov. 1937; deposited in the Drake-collection, U. S. National Museum, Washington, D. C., U.S.A.

Paratype, 1 Female. Macay, Queensland, Australia—W. A. McDoogall coll., Aug. 12, 1932, in the collection of the author.

The new species is allied to *Carventus griseolus* (Signoret), 1880, from New Guinea, but differs from it by: the fore lobe of the pronotum is much narrower than the hind lobe; the proportions of the antennal segments are different. The genus *Carventus* was not recorded from Australia.

Among Aradidae from the Hungarian National Museum is one specimen of *Carventus* from Glen Innes, N.S.W., Australia, which represents another species, but as this specimen is without head, I restrain from the description.

II. **DRAKEIDA** new genus

Elongately ovate; most of the head, borders, tubercles or carinae of the pronotum, scutellum, and connexivum, with longer or shorter bristles pasted together with an ivory incrustation, forming brush-shaped palisades, rows or protuberances. Ventral surface with flattened lines or bands of very short bristles covered with ivory incrustation.

HEAD. Shorter than wide through the eyes, mostly covered with erect bristles pasted together with incrustation. Anterior process tiny, as long as antenniferous tubercles; latter short, dentiform, but the cover of incrustation make them look blunt. Eyes small; infraocular carinae heavily incrustated, forming high tubercles; postocular tubercles dentiform, project beyond the outer border of the eyes. Posterior border of the head widely rounded, and carinate. Antennae rather stout; the first segment the stoutest, clavate, and curved outward; the second the smallest; the third the longest, almost twice as long as the second; the fourth pyriform, longer than the first, but shorter than the third. Rostral groove deep, posteriorly closed; rostrum does not reach the hind border of the groove.

PRONOTUM. Transverse, divided into two lobes; fore lobe is lower and narrower than the hind lobe; borders and discs provided with a pattern of higher and lower brush-shaped palisades, rows or protuberances, formed by the pasted together erect bristles. Collar distinct. Fore disc with two (1+1) outer, large and high tubercles, and two (1+1) much smaller and lower tubercles between them. Hind lobe transversely inflated. Lateral borders of both lobes rounded; hind border of the pronotum subtruncate.

SCUTELLUM. Small, triangular, shorter than wide at the base, with high palisades of incrustated bristles on the borders, and obliquely across the disc, leaving a middle cordate, callous spot.

ABDOMEN. Longer than wide; lateral borders parallel, posterior in the female rounded; connexivum with exterior and interior high palisades of pasted together bristles; the connexivum II (the first visible) is twice as long as III. Spiracles of segment II lateral, placed on the top of high tubercles; those of III also lateral, but placed directly on the border; both visible from above. Spiracles of IV to VII ventral, placed close to the lateral margin, but not visible from above; those of the lobes (VIII) terminal.

Venter with transverse and inflated posterior borders of sternum III to VI; sternum VII in the female cut into two lateral, subtriangular plates; genital plates (VIII) touching the hind border of sternum VI; genital lobes divergent, reaching the middle of IX; the latter posteriorly tricuspidate.

LEGS. Femora inermis, but with a fine setigerous granulation; tibiae cylindrical, also with a fine setigerous granulation; fore tibiae on inner side, slightly before the tip, with a fine, curved spur; others inermes. Tarsi without arolia, and with fine claws.

Genotype: *Drakeida incrustata* n. sp.

The new genus is allied to the neotropical genus *Proxius* Stal, 1873, differing from it by: pointed postocular spines; quite different pattern of the incrustated bristles on the head, pronotum, scutellum and abdomen; first two pairs of the spiracles lateral and visible from above, and fore tibiae armed.

It is a pleasure to dedicate this genus to Dr. Carl J. Drake.

Drakeida incrustata n. sp.

FEMALE. HEAD. Much shorter than wide through the eyes (22:32), or across the postocular tubercles (22:35). Anterior process tiny and declivous, reaches to $\frac{1}{4}$ of the first antennal segment. Almost all surface of the head is heavily incrustated, leaving without incrustation only: on the upper side, two (1+1) narrow and deep L-shaped fissures, placed between the median elevation of the vertex and infraocular carinae; on the ventral side, the bases of the antennal tubercles, and rostrum. The proportions of the antennal segments (1 to 4) are: 13(7):8(4 $\frac{1}{2}$):15(4):14(5), the figures between brackets representing the maximal width of the segment.

PRONOTUM. Shorter on median line than wide across the humeri (38:68); fore lobe narrower than the hind lobe (53:68); collar with a fine, transverse carina formed by erect, incrustated bristles; antero-lateral angles rounded and provided with a high, brush-shaped palisade of incrustated bristles; the high outer tubercles of the fore lobe each with an oblique, divergent backward, high palisade of similar bristles; another smaller and lower row is at the inner side of each high palisade; median line with a low incrustated carina running backward to $\frac{1}{3}$ of the hind lobe, where it forms a cross-shaped figure; laterally of the latter are placed two (1+1) very high, erect, curved, incrustated carinae. Inflated hind lobe with a low, transverse, incrustated carina, three times interrupted: on the median line and laterally, where it is crossed by two (1+1) very high, incrustated palisades. Lateral borders of the hind lobe provided with low incrustated carinae; posterior border with a patch of low incrustated bristles in the middle. The surface of the pronotum between the carinae and palisades is naked and shiny.

SCUTELLUM. Shorter than wide at the base (21:35); lateral borders almost straight, the tip pointed (Fig. 3).

ABDOMEN. Longer than wide (102:75). The inner row of the incrustated bristles on the connexiva are higher and wider than the outer rows. The genital lobes are also incrustated (Fig. 4).

COLOR. Yellow-brown; incrustation ivory.

FEMALE. Total length 3.07 mm.; width of the pronotum 1.13 mm.; width of the abdomen 1.27 mm.

Holotype, Female. Mt. Makiling, Luzon, Philippines Republic—Baker coll.; deposited in the Drake-collection, U. S. National Museum, Washington, D. C., U.S.A.

Tribe Mezirini Van Duzee, 1916.

III. *ARTABANUS* Stal, 1865.*Artabanus australis* n. sp.

FEMALE. Closely allied to *Artabanus lativentris* Esaki & Matsuda, 1951, having the same shape of the body and pattern of colors, but is relatively narrower, antennae shorter, less than twice as long as the head (46:25); all femora without bigger spines, only with a few very fine teeth on the inferior side.

BIOMETRICAL MEASURES. Head as long as wide through the eyes (25:25); the proportions of the antennal segments (1 to 4) are: 12:7:17:10; pronotum much shorter than wide across the humeri (27:50); scutellum shorter than wide at the base (20:25); abdomen about as long as wide (64:65).

FEMALE. Total length 6.85 mm.; width of the pronotum 2.50 mm.; width of the abdomen 3.25 mm.

Holotype, Female. Queensland, Australia; deposited in the Hungarian National Museum, Budapest.

IV. *MEZIRA* Amyot & Serville, 1843.*Mezira sulcata* n. sp.

MALE. HEAD. Shorter than wide through the eyes (δ —28:31, ♀ —30:33); anterior process stout, anteriorly slightly emarginate, reaches to $\frac{2}{3}$ of the first antennal segment; antenniferous tubercles stout, dentiform, subparallel, reach to $\frac{1}{3}$ of the first antennal segment. Eyes exerted. Postocular tubercles small, dentiform, do not reach the outer border of the eyes; infraocular carinae high, and narrow. Vertex convex, with a few granules. Antennae stout, less than twice as long as the head (50:28); the proportions of the antennal segments (1 to 4) are: δ —12:13:13:12, ♀ —14:14:14:13. Rostrum reaches to the hind border of the head.

PRONOTUM. Shorter on the median line than wide across the humeri (δ —37:68, ♀ —40:71). Fore lobe separated from the hind lobe by a very deep and narrow, transverse furrow, directed down and forward, so that the hind borders of the four stout ridges of the fore lobe are slightly overhanging the hind lobe. Antero-lateral angles of the fore lobe are slightly expanded and reflexed, evenly rounded. Fore disc with four (2+2) stout, granulated ridges, and with a very deep and narrow median furrow. Hind lobe is much wider than the fore lobe (δ —68:48, ♀ —71:52); lateral borders parallel, anteriorly convergent; hind border deeply, subangularly emarginate; posterior angles angularly projected backward. Disc transversely elevated; laterally, along the humeri, slightly depressed; anteriorly with a few very big granules; posteriorly with a smaller granulation, which is somewhat obliterated in the middle of the disc.

SCUTELLUM. Subtriangular, shorter than wide (δ —30:38, ♀ —35:40); all three borders carinate; disc transversely rugose, and with a narrow median carina; the tip of the scutellum excised.

HEMELYTRAE. Reach to the middle (δ), or to the fore border (♀) of tergum VII; corium granulated, basal costal border of the latter reflexed.

apical border slightly emarginate interiorly, convex exteriorly; apical angle acute, reaches to $\frac{2}{3}$ of connexivum III (the second visible).

ABDOMEN. Longer than wide (δ —97:75, ♀ —110:85); in the male parallel, from segment VI roundly convergent, posteriorly subtruncate, the posterior border of connexivum VII emarginate in the middle. Hypopygium small, subcordate; its disc depressed on each side along the median ridge; lobes (VIII) very small. In the female abdomen is widened till segment VII, then rounded; lobes subtriangular, short; segment IX slightly projected backward. All spiracles ventral, placed far from the lateral borders.

LEGS. Inermis.

COLOR. Dark ferruginous; membrane piceous; rostrum and tarsi yellow-brown.

Total length δ —9.85, ♀ —10.85 mm.; width of the pronotum δ —3.4, ♀ —3.5 mm.; width of the abdomen δ —3.75, ♀ —5.5 mm.

Holotype, Male. New South Wales, Australia; deposited in the Hungarian National Museum, Budapest.

Allotype, Female. Collected with the holotype; in the same collection.

Paratypes, 1 ♂ and 1 ♀ . Queensland, Australia; in the same collection, and in the collection of the author.

New species is somewhat allied to *Mezira membranacea* (F.), 1798, but differs from it by: pronotum very deeply sulcate; hypopygium much smaller, and differently shaped; connexivum VII of the males emarginate; and different color.

V. *CTENONEURUS* Bergroth, 1887.

Ctenoneurus halaszfyi n. sp.

MALE. Elongate, subparallel, slightly widening backward till segment IV, then narrowing.

HEAD. Almost as long as wide through the eyes (23:22) anterior process long and parallel, apically slightly notched, distinctly projecting beyond the tip of the first antennal segment; antenniferous tubercles acute, exteriorly parallel, reach to the basal third of the first antennal segment. Eyes moderately exerted. Postocular tubercles acute, reach to the outer border of the eyes; infraocular carinae fine and low, granulated; vertex convex, finely granulated. Antennae one and a half times as long as the head width through the eyes (34:22); the proportions of the antennal segments (1 to 4) are: 7:7:9:11; the first curved at the base; the second and third tapering toward the base; the fourth fusiform. Rostrum reaches to the base of the head.

PRONOTUM. Rather convex, half as long as wide across the humeri (22:45); the transverse interlobal furrow fine and shallow; anterior border slightly emarginate; collar very fine; antero-lateral borders narrowly expanded; antero-lateral angles slightly projecting forward, rounded; lateral notch almost imperceptible; lateral borders of the fore lobe converging;

those of the hind lobe subparallel; hind border widely and shallowly emarginate. Fore disc evenly convex, with a fine, shallow median furrow; laterally of it with a pattern of fine, concentric rugae; hind disc finely granulated (Fig. 5).

SCUTELLUM. Shorter than wide at the base (23:27); lateral borders rimmed, slightly emarginate, before the apex convex, the tip rounded. Disc granulate, and with a low, transversely rugose, median carina, running from the basal third to the tip of the scutellum.

HEMELYTRAE. Slightly project beyond the fore border of tergum VII; corium finely granulated, its apical border shallowly emarginate; its apical angle acute, reaches to the middle of connexivum III (the second visible); exterior border reflexed at the base.

ABDOMEN. Longer than wide (73:51), parallel, posteriorly rounded; its maximal width across segments III and IV; postero-exterior angles of the connexiva not protruding; discs of the connexiva densely punctured. Hypopygium short and wide (10:16); disc with a badly defined median carina, finely granulated. Venter convex. Spiracles II to VII ventral, placed far from the lateral border; those of the lobes (VIII) lateral and visible from above (Fig. 6).

COLOR. Dark ferrugineous; rostrum and tarsi ochraceous; membrane piceous.

MALE. Total length 7.15 mm.; width of the pronotum 2.25 mm.; width of the abdomen 2.5 mm.

Holotype, Male. Simbang, Huon Golf, New Guinea—Biró coll., 1898; deposited in the Hungarian National Museum, Budapest.

It is a pleasure to dedicate this species to Dr. Eva Halaszfy.

Ctenoneurus halaszfyi n. sp. is allied to *C. hochstetteri* (Mayr), 1866, but differs from it by: body is more parallel; the fore lobe of the pronotum more convex; antennae relatively longer; the apical angle of the corium more acute; hypopygium of the males differently shaped; color is lighter, ferrugineous. *Ctenoneurus* was not recorded from New Guinea.

VI. *NEUROCTENUS* Fieber, 1861.

The genus *Neuroctenus* Fieber, 1861, with almost worldwide distribution, is far less heterogeneous than the genus *Mezira* A.S. Most of its species are very easily distinguished from the latter, though there is a small group of oriental species, which at first sight resemble some species of *Mezira*, and some of which were described in that genus, i.e.: *Neuroctenus ater* (Jakovlev), 1878, *N. castaneus* (Jakovlev), 1878, and *N. confusus* Kormilev, 1955. Now I am able to add to this group two species more, both from New Guinea. These species are isolated in the genus.

***Neuroctenus meziroides* n. sp.**

FEMALE. HEAD. Almost as long as wide through the eyes (22:23); anterior process big, jugae expanded, anteriorly rounded and cleft, project far beyond the tip of the first antennal segment; antenniferous tubercles large, flat, acute, slightly divergent, reach to the middle of the first antennal segment. Antennae slender, one and a half times as long as the head (33:22); the proportions of the segments (1 to 4) are: 8:7:10:8. The first segment short and clavate, the second and third tapering toward the base, the fourth elongately fusiform. Eyes exerted; postocular tubercles acute, slightly project beyond the outer border of the eyes; infraocular carinae fine, granulated; vertex inflated and granulated; lateral shelves depressed, callous. Rostrum short, does not reach the hind border of a wide and deep rostral groove.

PRONOTUM. Less than half as long as wide across the humeri (19:42), divided into two lobes by a distinct, transverse furrow; the fore lobe is narrower than the hind lobe (34:42); fore border truncate; collar very fine, granulated; antero-lateral angles expanded as small rounded lobes; lateral borders subparallel, posteriorly divergent; disc with four (2+2) semiobliterated, and granulated ridges. Hind lobe twice (1+1) depressed on the disc; lateral borders parallel, anteriorly convergent; hind border widely and evenly emarginate (Fig. 7).

SCUTELLUM. Large, triangular, transversely rugose, and with a fine, low median carina; lateral borders straight, carinate, the tip rounded.

HEMELYTRAE. Do not reach the hind border of tergum VI, corium reaches to the first third of connexivum III (the second visible); its outer border narrowly reflexed, does not project beyond the outer border of the abdomen; its apical angle pointed, its apical border twice shallowly emarginate; disc granulated.

ABDOMEN. Ovate, longer than wide across segment IV (67:56). Posterior border of segment VII truncate; lateral borders of the abdomen evenly convex; postero-exterior angles of the connexiva scabrous, each with two rounded, callous spots; disc of tergum VII scabrous, and depressed in the middle. Genital lobes large, triangular, projecting far beyond the tip of segment IX; the tip of IX is shallowly notched, the genital valves being slightly longer than the oviduct (Fig. 8).

COLOR. Uniformly ferruginous; posterior borders of the connexiva, trochanters, tibiae, tarsi and rostrum yellow-brown; membrane brown.

FEMALE. Total length 6.5 mm.; width of the pronotum 2.1 mm.; width of the abdomen 2.8 mm.

Holotype, Female. Sattelberg, Huon Golf, New Guinea—Biró coll., 1898; deposited in the Hungarian National Museum, Budapest.

***Neuroctenus luteomarginatus* n. sp.**

MALE. Smaller and narrower than the preceding species.

HEAD. As long as wide through the eyes (18:18); anterior process slender, tapering to the tip, on the tip slightly notched, reaches to the tip of the first antennal segment; antenniferous tubercles dentiform, acute,

divaricating. Antennae slender, the proportions of the antennal segments (1 to 4) are: 8:7:9:8 (?), the tip of the fourth is broken off one antenna, two apical segments lacking from another. Postocular tubercles acute, reach to the outer border of the eyes; rostrum a little longer than in the preceding species, though also do not reach the hind border of the groove.

PRONOTUM. Less than half as long as wide across the humeri (16:38); fore lobe narrower than the hind lobe (28:37); fore border roundly emarginate; collar thin, but more conspicuous; antero-lateral angles slightly expanded, rounded, and slightly projecting forward; lateral borders subparallel, anteriorly rounded; disc with a narrow median furrow, and four (2+2) low, granulated ridges. Hind disc as in the preceding species (Fig. 9).

SCUTELLUM. Shorter than wide (18:23); lateral borders slightly emarginate before the tip, the tip angular; disc granulated, and with a cross-shaped median ridge.

HEMELYTRAE. Reach to $\frac{2}{3}$ of tergum VII; apical angle of the corium not so acute as in the preceding species; apical border emarginate interiorly; disc granulated.

ABDOMEN. Longer than wide across segment V (56:47); postero-lateral angles of the connexiva II to IV scarcely protruding, those of V and VI slightly protruding, those of VII produced backward as small rounded lobes, reaching to the middle of the hypopygium; hypopygium subcordate, depressed in the middle, rounded posteriorly; lobes (VIII) slender and long, reach to the tip of the hypopygium (Fig. 10).

COLOR. Ferruginous; posterior margins of the connexiva II to VI, tarsi and rostrum, yellow; membrane brownish, with a piceous spot at the first third of the outer border.

Other characters as in the preceding species.

MALE. Total length 5.45 mm.; width of the pronotum 1.85 mm.; width of the abdomen 2.35 mm.

Holotype, Male. Sattelberg, Huon Golf, New Guinea—Biró coll., 1898 deposited in the Hungarian National Museum, Budapest.

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EXPLANATION OF PLATE V

- Fig. 1. *Carventus australis* n. sp., ♀, head and pronotum.
Fig. 2. *Carventus australis* n. sp., ♀, the tip of the abdomen from below.
Fig. 3. *Drakeida incrustata* n. g., n. sp., ♀, head, pronotum and scutellum.
Fig. 4. *Drakeida incrustata* n. g., n. sp., ♀, the tip of the abdomen from below.
Fig. 5. *Ctenoneurus halaszfyi* n. sp., ♂, head and pronotum.
Fig. 6. *Ctenoneurus halaszfyi* n. sp., ♂, the tip of the abdomen from above.
Fig. 7. *Neuroctenus meziroides* n. sp., ♀, head and pronotum.
Fig. 8. *Neuroctenus meziroides* n. sp., ♀, the tip of the abdomen from below.
Fig. 9. *Neuroctenus luteomarginatus* n. sp., ♂, head and pronotum.
Fig. 10. *Neuroctenus luteomarginatus* n. sp., ♂, the tip of the abdomen from above.

